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(54) WATER BASE INK COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a water base ink composition capable of writing for a long way while suppressing dripping or blotting of a calligraphy as well possible and preventing wearing of a ball bearing step as well as possible and giving excellent quality of the calligraphy by formulating water-soluble mucopolysaccharides, an amino acid-type betaine and water.

SOLUTION: This composition is composed of (A) water-soluble mucopolysaccharides (e.g. gum arabic), (B) an amino acid-type betaine and (C) water. Preferably, 0.01-5wt.% of the component A and 0.01-8wt.% of the component B are mixed into the whole amount of the objective composition. Preferably, 0.1-20wt.% of a coloring agent is used to the whole amount of the composition. In a case of using a pigment as the coloring agent, a dispersant such as a polymer dispersant may be combinedly used and the using amount is preferably 1-20wt.% based on the whole weight of the composition. Other than the component C, various water-soluble organic solvent such as ethylene glycol may be formulated into the ink in order to prevent drying of the ink at a pen point, etc. Preferably, an using amount of the solvent is 5-40wt.% based on the whole weight of the composition.

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CLAIMS

[Claim(s)]

[Claim 1] The water-color-ink constituent which consists of water-soluble thickening polysaccharide, an amino acid mold betaine, and water at least.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is an ink constituent which uses water as the main solvent, is used for the ball-point which has especially a metal chip, and relates to the water-color-ink constituent which is compatible in the quality of a hand, and the dischargeability of ink.

[0002]

[Description of the Prior Art] Even if it uses a ball-point for a long period of time, they are used from there being little change of the hand width by wear of a nib etc., while a comparatively thin hand is obtained unlike the writing implement which has a nib made from fiber, and a nib made of resin. [many] As for the viscosity of the water-color-ink constituent used for such a ball-point, the thing of 1 - Number cp (25 degrees C) and the thing of 50 - 30000cp (25 degrees C) are known. The thing of 1 - Number cp (25 degrees C) is used for the ball-point of the structure which mainly used the cotton pad as an ink occlusion object, and the thing of 50 - 30000cp (25 degrees C) is used for the thing of structure which mainly holds ink in the free condition in hollow containers, such as a barrel.

[0003] Since especially the ball-point using a water-color-ink constituent has comparatively large coefficient of friction of the water which is a solvent, wear of the ball receptacle seat by rotation of a ball tends to generate it. Consequently, the ink circulation slot in a ball-point chip deformed, or a part or the whole was blockaded, and the regurgitation of an ink constituent might become inadequate. When deformation and lock out occurred into the ink circulation slot, the blur arose in the hand, a smooth note becomes impossible, and there was a problem that writing distance became short. In order to solve this problem, the attempt which adds surfactants, such as water soluble cutting oil, such as an oxyethylene-oxypropylene copolymer, and polyoxyethylene alkyl ether, glyceryl fatty acid ester, polyoxyethylene hardening castor oil, as lubricant, and raises the lubricity of an ink constituent in an ink constituent is made.

[0004]

[Problem(s) to be Solved by the Invention] Surface active agents, such as water soluble cutting oil, such as an oxyethylene-oxypropylene copolymer mentioned above, and polyoxyethylene alkyl ether, glyceryl fatty acid ester, polyoxyethylene hardening castor oil, have the weak adhesion force to a ball or a ball strike, and in order to fully demonstrate the lubrication effectiveness, it is necessary to add them somewhat so much. However, if water soluble cutting oil, such as an oxyethylene-oxypropylene copolymer, is added so much, ink will become easy to adhere also to the lateral surface near the tip small sum of a ball-point chip, and it will become easy to generate a BOTE phenomenon. Moreover, if surfactants, such as polyoxyethylene alkyl ether, glyceryl fatty acid ester, and polyoxyethylene hardening castor oil, are added so much, the penetrating power to the space of ink is too strong, the balance of the dissolution system in ink will collapse, separation of an ink constituent will take place [a hand will spread, or], and a shade will be made to a hand. When it was used with the addition of the range which these problems do not generate, respectively, as a result, it will not fully be controlled by writing distance but wear of a ball receptacle seat became short. Moreover, when [which the path of a

ball called 0.3mm and 0.4mm especially] using the thing of a minor diameter comparatively, it was that from which the rotational frequency of a ball increases to writing distance, it can tell that it becomes easy to wear out, and the lubrication effectiveness is expected more.

[0005] Controlling problems, such as BOTE, a blot of a hand, and a shade of a hand, as much as possible, it prevents wear of the ball receptacle seat by rotation of a ball as much as possible, secures the dischargeability of a good ink constituent, and enables a long-distance note, and the purpose of this invention is to offer the water-color-ink constituent with which good hand quality is acquired.

[0006]

[Means for Solving the Problem] This invention makes a summary the water-color-ink constituent which consists of water-soluble thickening polysaccharide, an amino acid mold betaine, and water at least.

[0007] As a coloring agent, although it is usable without limitation, the dyes and pigments conventionally used for the water-color-ink constituent When the example is given, as a color JAPA Norian fast black D concentrated (C. I. direct black 17), water black 100L (said -- 19) and the water black L-200 (said -- 19) -- water black #7 (said -- 19) and the kaya set black W9 (said -- 19) -- It direct-fast-black-AB(s) (said -- 32). the direct fast black B (said -- 22) -- the direct deep black EX (said -- 38) and direct deep black (said 38 imitations) -- It kaya-lath-sprag-lei-VGN(s) (said -- 71). direct fast black concentrated (said -- 51) -- KAYAKU direct brilliant yellow G (C. I. direct eroticism -4) direct fast yellow -- 5 GL (said -- 26) the climbing-irons buri nonuniformity yellow GCLH (said -- 44) and the direct fast yellow R (said -- 50) -- The climbing-irons direct fast red FH (C. I. direct red 1), Nippon fast Scarlett GSX (said -- 4) and direct fast Scarlett -- 4 BS (said -- 23) climbing-irons direct DEYURIN BH (said -- 31) and direct Scarlett B (said -- 37) -- KAYAKU direct Scarlett 3B (said -- 39) and climbing-irons brim RABIN concentrated 2BLH (said -- 75) -- It climbing-irons-buri-nonuniformity-red-4-BH (said -- 81)-kaya-lath-SUPURARUBIN-BL(s) (said -- 83). SUMIRAITO Red F3B (said -- 80) -- kaya lath light red F5G (said -- 225) and kaya lath light red F5B (said -- 226) -- kaya lath light rose FR (said -- 227) direct sky blue 6B (C. I. direct blue 1) -- direct sky blue 5B (said -- 15) and benzobrilliant sky blue -- 8 GS (said -- 41) SUMIRAITOSUPURABURU BRR concentrated (said -- 71) and the die bow TAKOIZU blue S (said -- 86) -- It kaya-raster-KOIZU-blue-GL(s) (said -- 86). water blue #3 (said -- 86) -- DAIWA blue 215H (said -- 87) and kaya lath SUPURA blue FF -- 2 GL (said -- 106) kaya lath SUPURA blue FFRL (said -- 108) KAYARASUSU plater KOIZU -- blue -- direct dye, such as FBL (said -- 199), -- acid blue black 10B (C. I. acid black 1) and Nigrosine (said -- 2) -- the water black R455 (said -- 2) and the water black R510 (said -- 2) -- It BX(s) and (said -- 24) kaya-Norian-milling-black-VLG(s) (said -- 26). the Suminol milling black 8 -- It MITSUI-nylon-black-GL(s) (said -- 52). kaya Norian milling black BR concentrated (said -- 31) -- It SUMIRAN-black-WA(s) (said -- 52). climbing-irons opal black WH extra concentrated (said -- 52) -- RANIRU black BG extra concentrated (said -- 107) and the kaya Norian milling black TLB (said -- 109) -- It kaya-Norian-milling-black-TLR(s) (said -- 110). the Suminol milling black B (said -- 109) -- climbing-irons opal black NYUKONKU (said -- 119) and water black 187-L (said -- 154) -- acid -- yellow #10 (C. I. acid yellow 1) -- It kaya-sill-yellow-GG(s) (said -- 17). the KAYAKU acid brilliant flavin FF (said -- 7:1) -- It % (said -- 17) and Suminol-leveling-yellow-NR(s) (said -- 19). xylene light yellow 2G140 -- water yellow #1 (said -- 23) and DAIWA Tartrazine (said -- 25) -- KAYAKU Tartrazine (said -- 23) and Suminol fast yellow R (said -- 25) die acid light yellow -- 2 GP (said -- 29) It Suminol-milling-yellow-MR(s) (said -- 42). the Suminol milling yellow O (said -- 38) -- It kaya-Norian-yellow-NFG(s) (said -- 49). water yellow #6 (said -- 42) -- Suminol milling yellow 3G (said -- 72) and the Suminol fast yellow G (said -- 61) -- the Suminol milling yellow G (said -- 78) and kaya Norian yellow N5G (said -- 110) -- Suminol milling yellow 4G200% (said -- 141) and the kaya Norian yellow NG (said -- 135) -- kaya Norian milling yellow 5GW (said -- 127) and kaya Norian milling yellow 6GW (said -- 142) -- SUMITOMO fast Scarlett A (C. I. acid red 8) and a KAYAKU silk -- a scaw -- let (said -- 9) -- a solar RUBIN extra (said -- 14) and a DAIWA new coccine (said -- 18) -- water Scarlett (said -- 18) and the DAIWA red No. (said -- 18) 102 climbing-irons BONSO-RH (said -- 26), the DAIWA red No. (said -- 27) 2, and Suminol leveling brilliant red S3B (said -- 35) -- kaya sill ruby Norian 3GS (said -- 37) and climbing-irons erythrosine

(said -- 51) -- the KAYAKU acid rhodamine FB (said -- 52) and the DAIWA red No. (said -- 52) 106 Suminol leveling ruby Norian 3GP (said -- 57) and a die -- acid -- alizarin RUBINORU F3G -- 200% (said -- 82) alizarin ruby Norian 5G (said -- 83) and climbing-irons eosine G H (said -- 87) -- water red #2 (said -- 87) and DAIWA red -- 103 WB (said -- 87) It climbing-irons-acid-phloxine-PB(s) (said -- 92). water pink #2 (said -- 92) -- It kaya-Norian-milling-Scarlett-FGW(s) (said -- 111). the DAIWA red No. (said -- 92) 104 and a rose bengal (said -- 94) -- kaya Norian milling RUBIN 3BW (said -- 129) and Suminol milling brilliant red 3BN concentrated (said -- 131) -- the Suminol milling brilliant red BS (said -- 138) and the climbing-irons opal pink BH (said -- 186) -- Suminol brilliant red B concentrated (said -- 249) and KAYAKU acid brilliant red -- 3 BL (said -- 254) KAYAKU-acid-brilliant-red-BL (said -- 265), and it kaya-Norian-milling-red-GW(s) (said -- 276). MITSUI acid violet 6B N (C. I. acid violet 15), the MITSUI acid violet BN (said -- 17) and water violet #1 (said -- 49) -- water violet #5 (said -- 49), the DAIWA purple No. (said -- 49) 1, the ink violet L10 (said -- 49), SUMITOMO patent PYUA blue VX (C. I. acid blue 1), water blue #106 (said -- 1), and PATEN TOBURU AF (said -- 7), water blue #9 (said -- 9), and the DAIWA blue No. (said -- 9) 1 the ink blue L20 (said -- 9), the SUPURA Norian blue B (said -- 15), and water blue #116 (said -- 15) -- It cage-en-TOSORU-brubru-OBX(s) (said -- 22). the cage en TOSORU brubru OBC (said -- 22) -- Suminol leveling blue 4GL (said -- 23) and MITSUI nylon fur STOV L G (said -- 25) -- kaya sill blue AGG (said -- 40) and kaya sill blue BR (said -- 41) -- the MITSUI alizarin SAFI roll SE (said -- 43) and Suminol leveling sky blue R extra concentrated (said -- 62) -- the MITSUI nylon fast sky blue R (said -- 78) and SUMITOMO brilliant INDO cyanine -- 6 Bh/e (said -- 83) N-6B350% (said -- 90) of sand run cyanines, and water blue #115 (said -- 90) -- It cage-en-TOSORU-brubru-OBX(s) (said -- 93). water blue #105 (said -- 90) -- SUPURA Norian cyanine 7BF (said -- 100) and SUMITOMO Brilliant Blue 5G (said -- 103) -- It reed-run-brilliant-blue-FFR(s) (said -- 104). acid blue (said -- 103) -- the KAYANORU milling ultra sky SE (said -- 112) and kaya Norian milling cyanine 5R (said -- 113) -- climbing-irons opal cyanine 2GLH (said -- 158) and DAIWA guinea-green-B (C. I. acid Green 3) acid brilliant milling Green (said -- 9) -- DAIWA green #70 (said -- 16) and kaya Norian cyanine Green G (said -- 25) -- acid dye, such as Suminol milling Green G (said -- 27) and water Orange #17 (C. I. acid Orange 56), -- The water yellow # yellow [2 (C. I. hood yellow 3) and food-grade] No. (C. I. hood yellow 3) 5 food-grade red No. (C. I. hood red 14) 3, The food color, such as the food-grade blue No. (C. I. acid blue 74) 2 and the food-grade green No. (C. I. acid Green 5) 2, There is basic dye, such as Malachite Green (C. I. 42000), Victoria blue FB (C. I. 44045), Methyl Violet FN (C. I. 42535), rhodamine F4G (C. I. 45160), and rhodamine 6G CP (C. I. 45160).

[0008] As a pigment, a well-known pigment can be used conventionally. As an example SpecialBlack 6 -- said -- S170 -- said -- S610 -- said -- 5 -- said -- this 4 and 4A -- said -- 550 -- said -- 35 -- said -- 250 -- said -- 100 and Printex 150T -- said -- U -- said -- V and this 140U -- said -- 140V -- said -- 95 -- said -- 90 -- said -- 85 -- said -- 80 -- said -- 75 -- said -- 55 -- said -- 45 -- said -- P -- said XE2 and this L6 -- said -- L -- said -- 300 -- said -- 30 -- said -- 3 -- said -- 35 -- said -- 25 -- said -- 200 -- said -- A -- said -- G (above, made in Degussa AG Japan), #2400B, #2350, #2300, and #2200B -- # 1000, #950, #900, #850, #MCF88, MA600, MA100, MA7 and MA11, #50, #52, #45, #44, #40, #33, #32, #30, CF9, #20B, # 4000B (above, product made from Mitsubishi Kasei Industry), and MONARCH It MOGULL(s). 1300 -- said -- 1100 -- said -- 1000 -- said -- 900 -- said -- 880 -- said -- 800 -- said -- 700 -- REGAL 400R, this 660R, this 500R, this 330R, this 300R, this 99R and ELFTTEX 2000 (above) 8 -- said -- 12 and BLACK PEARLS Made in [Cabot Co.LTD] the U.S., Raven7000 -- said -- 5750 -- said -- 5250 -- said -- 5000 -- said -- 3500 -- said -- 2000 -- said -- 1500 -- said -- 1255 -- said -- 1250 -- said -- 1200 -- said -- 1170 -- said -- 1060 -- said -- 1040 -- said -- 1035 -- said -- 1020 -- said -- 1000 -- said -- 890H -- said -- 890 -- said -- 850 -- said -- 790 -- said -- 780 -- said -- 760 -- said -- 500 -- said -- 450 -- said -- 430 -- said -- 420 -- said -- 410 -- said -- 22 -- said -- 16 -- said -- 14 -- said -- 825Oil(s) Beads said -- H20, this C, and Conductex 975 -- said -- 900 and this SC (above) This carbon black [, such as the Columbian Carbon Japan, Ltd. make,], KA-10, and 10P, said -- 15 -- said -- 20 -- said -- 30 -- said -- 35 -- said -- 60 -- said -- 80 -- said -- 90 and KR-310 -- said -- 380 -- said -- 460 -- said -- 480 (above) Titanium oxide, such as the Titan Kogyo K.K. make and P25 (product made from Japanese Aerosil), BS-605 -- said --

607 (above, product made from Oriental Aluminum), and the bronze powder P-555 -- said -- P-777 (above) the product made from Nakajima Metallic foil Industry, and the bronze powder 3L5 -- said -- 3L7 (above) Metallic flake pigments, such as a product made from Fukude Metallic foil Industry, and black iron oxide, Synthetic Ochre, Inorganic pigments, such as red ferrous oxide, ultramarine blue, Berlin blue, cobalt blue, chrome green, and chrome oxide, Hansa Yellow 10G -- said -- 5G -- said -- 3G -- said -- 4 and the said GR -- said -- A and benzidine yellow -- The permanent yellow NCG, the Tartrazine lake, quinoline yellow, SUDAN 1, permanent Orange, INDA Indanthrene brilliant Orange GN, Permanent Brown FG, Para Brown, Permanent Red 4R, Fire red, brilliant carmine BS, pyrazolone red, Lake Red C, the Quinacridone red, brilliant carmine 6B, Organic pigments, such as Bordeaux 5B, thioindigo red, the fast violet B, dioxane violet, an alkali blue lake, a copper phthalocyanine blue, indigo, an acid Green lake, and Phthalocyanine Green, etc. are mentioned. Moreover, in addition to this, inorganic fluorescent pigments, such as zinc sulfide, silicic acid zinc, zinc-sulfate cadmium, calcium sulfide, a strontium sulfide, and calcium wolframate, and other well-known organic fluorescent pigments are mentioned. Although it can be used with combination with that the above mentioned coloring agent is independent or others and the amount used changes with color tones etc., 0.1 - 20 % of the weight is desirable to the aqueous constituent whole quantity.

[0009] Although it is desirable to use a dispersant together when a pigment is used as a coloring agent here, as a dispersant If what is used as a dispersant of pigments, such as the water solubility or water-soluble resin generally used conventionally, and a surfactant of an anion system or the Nonion system, illustrates As a giant-molecule dispersant, natural rubber, such as gum arabic and tragacanth gum Glucosides, such as a saponin, methyl cellulose, a carboxy cellulose, Cellulosics, such as a hydroxymethyl cellulose, a ligninsulfonic acid salt, Naturally-occurring polymers, such as a shellac, polyacrylate, the salt of a styrene acrylic-acid copolymerization object, Nonionic giant molecules, such as anion nature giant molecules, such as a salt of a vinyl naphthalene-maleic-acid copolymerization object, sodium salt of beta-naphthalene sulfonic-acid formalin condensate, and phosphate, polyvinyl alcohol, a polyvinyl pyrrolidone, and a polyethylene glycol, etc. are mentioned. Moreover, nonionic surfactants, such as anionic surfactants, such as alkyl sulfate, a polyoxyethylene-alkyl-ether sulfate, N-acylamino acid and its salt, a sodium N-acyl methyl taurate salt, polyoxyethylene-alkyl-ether acetate, alkyl sulfo carboxylate, alpha-olefin sulfonate, alkyl phosphate, and polyoxyethylene-alkyl-ether phosphate, polyoxyethylene alkyl ether, sorbitan alkyl ester, and polyoxyethylene sorbitan alkyl ester, are mentioned as a surface active agent. It can be used even if it chooses and uses together these one sort or two sorts or more. The amount used has 1 - 20 desirable % of the weight to the aqueous constituent whole quantity.

[0010] Furthermore, it is advantageous on pigment ink manufacture to use the water-color-ink base which distributed the pigment to the aqueous medium in the case of pigment ink. Specifically Fuji SPBlack 8031 -- said -- 8119 -- said -- 8167 -- said -- 8276 -- said -- 8381 -- said -- 8406 and Fuji SP Red 5096 -- said -- 5111 -- said -- 5193 -- said -- 5220 and Fuji SP Bordeaux 5500 Fuji SP Blue 6062 -- said -- 6133 -- said -- 6134 -- Fuji SP Green 7051 and Fuji SP 3074 (above) Yellow 4060 and Fuji SP Violet 9011 and Fuji SP Pink 9524 -- said -- 9527 and FujiSP Orange 534 and FUji SP Brown The product made from Fuji Coloring matter, Emacol Black CN, Emacol Blue FBB, The said FB, the said KR, Emacol Green LXB, Emacol Violet BL, Emacol Brown 3101 EmacolCarmine FB, Emacol Red BS, Emacol Orange R, Emacol Yellow It FGN(s). FD and this Intermediate Routing Node -- said -- 3601 -- said -- the said GN and the said GG -- said -- F5G -- said -- F7G -- said -- 10GN(s) -- said -- 10G and Sandye Super It BlackK(s). This C, Sandye Super Grey B, Sandye Super Brown SB, The said FRL, the said RR, Sandye Super Green L5G, The said GXB, Sandye Super Navy Blue HRL, the said GLL, this HB one, and this FBL-H -- said -- FBL-160, the said FBB, and Sandye Super Violet BLH/C The said BL, Sandye SuperBordeaux FR, Sandye Super Pink FBL, This F5B, Sandye SuperRubine FR, Sandye super Carmine FB, Sandye Super Red FFG, the said RR, this BS, SandyeSuperOrange floor line -- said -- R, the said BO, and Sandye Gold Yellow 5 GR said -- R, this 3R, and Sandye Ywllow GG and this F3R -- It GSN(s). this IRC, the said FGN, the said GN, and the said GRS -- said -- GSR-130 -- said -- GSN-130 -- said -- said -- 10 GNs (above, product made from San-yo Coloring matter) Rio

FastBlackFx 8012 -- said -- 8313 -- said -- 8169 and Rio FastRed Fx 8209 -- said -- 8172 and Rio Fast Red S Fx8315 -- said -- 8316 and Rio Fast Blue Fx 8170 RioFast Blue FX 8170 Rio Fast Blue S Fx 8312 Rio Fast Green S Fx 8314 (above, Toyo Ink make), NKW-2101 -- said -- 2102 -- said -- 2103 -- said -- 2104 -- said -- 2105 -- said -- 2106 -- said -- 2107 -- said -- 2108 -- said -- 2117 -- said -- 2127 -- said -- 2137 -- said -- 2167 -- said -- 2101P -- said -- 2102P -- said -- 2103P -- said -- 2104P -- said -- 2105P -- said -- 2106P -- said -- 2107P -- said -- 2108P -- said -- 2117P -- said -- 2127P -- said -- 2137P -- This 2167P, NKW-3002 -- said -- 3003 -- said -- 3004 -- said -- 3005 -- said -- 3007 -- said -- 3077 -- said -- 3008 -- said -- 3402 -- said -- 3404 -- said -- 3405 -- said -- 3407 -- said -- 3408 -- said -- 3477 -- said -- 3602 -- said -- 3603 -- said -- 3604 -- said -- 3605 -- said -- 3607 -- said -- 3677 -- said -- 3608 -- said -- 3702 -- said -- 3703 -- said -- 3704 -- said -- 3705 -- said -- 3777 -- said -- 3708 -- said -- 6013 -- said -- 6038 -- said -- 6559 (above) The product made from Japanese Fluorescence, Kos Mocha Ra S 1000F series (product made from Oriental Soda), the Victoria yellow G-11 -- said -- G-20 and Victoria orange G-16 -- said -- G-21 and Victoria red [] -- G-15 -- said -- G-25 (above) G-19 -- said -- G-22 and Victoria pink G-17 -- said -- G-23 and Victoria green G-18 -- said -- G-24 and Victoria blue The product made from Country Coloring matter etc. is mentioned, and these are one sort or the thing which chooses two or more sorts and can be used together.

[0011] Besides the water which is an indispensable condition, various kinds of water-soluble organic solvents of the solvent are usable, and these are used for it for the purpose, such as the various quality as a water-color-ink constituent, for example, ink desiccation prevention with a nib, and ink anti-freeze in the time of low temperature. Glycols, such as ethylene glycol, a diethylene glycol, triethylene glycol, propylene glycol, a polyethylene glycol, 1, 3-butylene glycol, thiodiethylene glycol, and a glycerol, ethylene glycol monomethyl ether, the diethylene-glycol monomethyl ether, 2-pyrrolidone, etc. can be used, and, specifically, these are one sort or the thing which chooses two or more sorts and can be used together. Moreover, the amount used has 5 - 40 desirable % of the weight to the ink constituent whole quantity.

[0012] An amino acid mold betaine is used in order to control wear of a ball receptacle seat. The amount used has 0.01 - 8.0 desirable % of the weight to the ink constituent whole quantity. Concomitant use with the lubricant which the amount used is made [many] when using the ball of a minor diameter especially and the higher lubrication effectiveness is required, and also is used conventionally is effective. An amino acid mold betaine shows betaines, such as an alkyl alanine which made basic structure the molecular structures which are amino acid, such as an alanine and a glycine, an alkyl glycine, an acyl alanine, a dialkyl aminoethyl glycine, and an alkylamide propyl glycine, and the carbon numbers of an alkyl group are 1-22. As an example of an amino acid mold betaine, it is SWANOL. AM-3130N, SWANOL AM-301 (above, made in Nikko Chemicals), RIPOMIN LA (above, LION make), the Nissan anone BF, the Nissan anone BL, The Nissan anone LG, Nissan anone BDF-R (above, Nippon Oil & Fats Co., Ltd. make), REBON 2000 (above, Sanyo Chemical Industries, Ltd. make), OBAZORIN BC OBAZORIN LB, OBAZORIN CAB, OBAZORIN LAB, OBAZORIN 516, OBAZORIN 516S, OBAZORINB (above, Toho Chemical Industry Co., Ltd. make), ANHI toll 20BS, and ANHI toll 24B, ANHI toll 86B (above, Kao Corp. make), etc. are mentioned.

[0013] Water-soluble thickening polysaccharide is used in order to raise the viscosity of the whole ink constituent and to aim at prevention of distributed stabilization of a coloring matter etc., or ink leakage, and in order to control wear of a ball receptacle seat with an amino acid mold betaine. The amount used has 0.01 - 5.0 desirable % of the weight to the ink constituent whole quantity. Specifically, the methyl cellulose of the gum arabic of a natural system, a tragacanth gum, Cyamoposis Gum, locust bean gum, an alginic acid, a carrageenan, gelatin, casein, xanthene gum, a dextran, and a semisynthesis system, ethyl cellulose, hydroxyethyl cellulose, a carboxymethyl cellulose, sodium carboxymethyl starch, sodium alginate, propylene glycol alginate, hydroxypropyl-ized Cyamoposis Gum, etc. are mentioned. These water-soluble thickening polysaccharide chooses one sort or two sorts or more, and can use together and use them.

[0014] To everything but these water solubility thickening polysaccharide, water soluble polymers, such as polyvinyl alcohol, a polyvinyl pyrrolidone, polyvinyl methyl ether, sodium polyacrylate, a

carboxyvinyl polymer, polyethylene oxide, vinyl acetate, the copolymer of a polyvinyl pyrrolidone, the alkali-metal salt of acrylic resin and an acrylic acid, and a copolymer of alkyl methacrylate, can also be used together for distributed stabilization, such as a coloring matter for the viscosity control of an ink constituent.

[0015] in order [moreover,] to control outflow inhibition of the ink constituent in the ink path of the writing implement of the ink constituent by generating of mold -- preservation-from-decay antifungal agents, such as sodium dehydroacetate, 1, 2-benzothia ZARIN-3-ON, and sodium benzoate, -- optimum dose ***** -- things are also made.

[0016] Furthermore, in the case of the writing implement which is using the metal for the part in contact with an ink constituent, a fatty acid like oleic acid as anticorrosive agents, such as benzotriazol and ethylenediaminetetraacetic acid, and a solubilizing agent can also be added for metaled corrosion prevention.

[0017] It faces manufacturing the ink constituent of this invention, and the various approaches learned conventionally can be adopted. For example, by carrying out churning mixing with agitators, such as a turbo mixer, when a color and the watercolor pigment base are used as a coloring matter, when a pigment is used as a coloring matter, it is easily obtained by carrying out mixed grinding by dispersers, such as a ball mill, a Sand grinder, a speed line mill, and a roll mill.

[0018]

[Function] About why an amino acid mold betaine and water-soluble thickening polysaccharide have effectiveness in wear control of a ball receptacle seat, it guesses as follows. The part which a part of part by which it was electrified carried out hydrogen bond of the amino acid mold betaine to the hydroxyl group of water-soluble thickening polysaccharide, or it attracted the electron pair of an oxygen atom, and combined, and was not combined with water-soluble thickening polysaccharide keeps good relations to metals used for a ball-point chip, such as nickel silver and stainless steel. Consequently, the adhesion layer of amino acid mold betaine-water solubility thickening polysaccharide is formed in the surface of metal of a ball receptacle seat.

[0019] Generally it is a huge molecule, the water-soluble thickening polysaccharide contained in the adhesion layer of the amino acid mold betaine-water solubility thickening polysaccharide concerned becomes entangled intricately, and since it carries out a meeting etc. and exists in an ink constituent, it becomes such a thick big thing that the frictional resistance between a ball and a ball receptacle seat can be caught as the whole adhesion layer. If a ball begins to rotate, an adhesion layer will shift to the hand of cut of a ball, while the amino acid mold betaine part had adhered to the ball receptacle seat, and will absorb the frictional resistance between a ball and a ball receptacle seat. Furthermore, if a ball rotates, an amino acid mold betaine will separate from a ball receptacle seat, and an adhesion layer will be breathed out. As a result of an adhesion layer's absorbing the great portion of frictional resistance and carrying out the role of lubricant by repeating such a gap and regurgitation, the abrasion resistance between a ball and a ball receptacle seat becomes small, and is considered that wear of a ball receptacle seat decreases. Thus, in order that an adhesion layer may show big effectiveness to wear control of a ball receptacle seat, it is not necessary to carry out abundant addition of an amino acid mold betaine and the water-soluble thickening polysaccharide, therefore they do not generate problems, such as BOTE of ink, a blot of a hand, and a shade of a hand,, either.

[0020]

[Example] Hereafter, an example explains this invention to a detail. the viscosity of each ink constituent in an example and the example of a comparison -- less than 50 cp -- ELD mold viscometer [by TOKIMEC, INC.] standard cone rotor 10rpm -- in ELD mold viscometer [by TOKIMEC, INC.] standard cone rotor 1rpm, 600 or more cp measurement and less than 2000 cp was measured in ELD mold viscometer ST rotor by TOKIMEC, INC. 20rpm, and 50 or more cp measurement and less than 600 cp was measured measurement and 2000 cp or more by ELD mold viscometer ST rotor by TOKIMEC, INC. 2.5rpm. The temperature at the time of measurement was 25 degrees C. In addition, it expresses the "weight section" that it is only with the "section" among each example.

[0021] Example 1NKW-2105 (made in [Japanese Fluorescence Chemistry] the yellow watercolor

pigment base) 45.0 section hydroxypropyl-ized Cyamopsis Gum (water-soluble thickening polysaccharide) 0.5 section RIPOMIN LA (an amino acid mold betaine, LION make) 1.0 section pro KUSERU GXL (antiseptics, made in ICI Japan) 0.1 **** After carrying out mixed churning of the components other than 53.4 section above-mentioned each gar gum in a component with an agitator for 1 hour, hydroxypropyl-ized Cyamopsis Gum was added, churning was performed again for 3 hours, and the yellow water-color-ink constituent of viscosity 380cp was obtained.

[0022] The example 2 DAIWA red No. (DAIWA formation a color, product made from Industry) 104 0.5 section xanthan gum (water-soluble thickening polysaccharide) 1.8 section hydroxypropylcellulose (water-soluble thickening polysaccharide) 1.0 section REBON 2000 (an amino acid mold betaine, Sanyo Chemical Industries, Ltd. make) 2.0 **** After carrying out mixed churning of the components other than 95.7 section above-mentioned each xanthan gum in a component, and hydroxypropylcellulose with an agitator for 1 hour, xanthan gum and hydroxypropylcellulose were added, churning was performed again for 3 hours, and the red water-color-ink constituent of viscosity 1950cp was obtained.

[0023] Example 3NKW-6559 (made in [Japanese Fluorescence Chemistry] the black watercolor pigment base) 40.0 section xanthan gum (water-soluble thickening polysaccharide) 0.5 section anone BL (an amino acid mold betaine, Nippon Oil & Fats Co., Ltd. make) 2.0 section anone LG (an amino acid mold betaine, Nippon Oil & Fats Co., Ltd. make) 1.5 section JON krill J-61 (styrene acrylic resin, product made from Johnson Polymer)

1.0 section PEMULEN TR-1 (an acrylic acid, the copolymer of alkyl methacrylate, product made from BFGoodrich) 0.4 **** 25% sodium-hydroxide water solution of 54.3 sections After carrying out mixed churning of except for 0.3 section above-mentioned each xanthan gum in a component, PEMULEN, and 25% sodium-hydroxide water solution with an agitator for 3 hours, Xanthan gum was added and it stirred again for 1 hour, and PEMULEN was added after that, and it stirred for 30 minutes, and the sodium-hydroxide water solution was added 25%, and the black water-color-ink constituent of viscosity 550cp was obtained.

[0024] Example 4 copper phthalocyanine blue 8.0 section ethylene glycol 7.0 section propylene glycol alginate (water-soluble thickening polysaccharide) 1.0 section ANHI toll 86B (an amino acid mold betaine, Kao Corp. make) 0.8 section sodium dehydroacetate (antiseptics) 0.2 **** After carrying out mixed churning of the components other than 3.0 section above-mentioned each propylene glycol alginate in a component with a ball mill for 4 hours, Propylene glycol alginate was added, distributed processing was performed again for 2 hours, 0.65-micrometer membrane filter (made in ADVANTEC East) removed the big and rough particle, and the blue water-color-ink constituent of viscosity 895cp was obtained.

[0025] Example 5 rhodamine 6G CP (C. I. BASIC red 1, Sumitomo Chemical Co., Ltd. make) A 0.2 section carboxymethyl cellulose (water-soluble thickening polysaccharide) 0.3 section REBON 2000 1.2 section RIPOMIN LA The copolymerization object of the 0.5 section methyl vinyl ether and a maleic anhydride (thickener) 0.2 **** Mixed churning of the component of the 97.0 sections above was carried out with the agitator for 3 hours, and the purple water-color-ink constituent of viscosity 507cp was obtained.

[0026] 6MA of examples 100 (carbon black, product made from Mitsubishi Kasei Industry) 8.0 section carboxymethyl hydroxypropyl-ized gar gum (water-soluble thickening polysaccharide) A 1.5 section carrageenan (water-soluble thickening polysaccharide) 0.2 section OBAZORIN LB (an amino acid mold betaine, Toho Chemical Industry Co., Ltd. make) 4.0 section NP-20 (the polyoxyethylene nonylphenyl ether, made in Nikko Chemicals) 2.0 section sodium benzoate 0.4 section propylene glycol 5.0 **** The carboxymethyl hydroxypropyl-ized gar gum in a component of the 80.9 section above, After carrying out mixed churning of the components other than a carrageenan with a ball mill for 3 hours, carboxymethyl hydroxypropyl-ized gar gum and a carrageenan were added, distributed processing was performed again for 2 hours, and the black water-color-ink constituent of viscosity 2018cp was obtained.

[0027] Example 7 Cronos KR380 (Titan Kogyo K.K. make) 30.0 section xanthan gum 0.4 section SWANOL AM-3130N 7.0 section JON krill J61J (ammonium salt [of a styrene-acrylic ester

copolymer], product made from Johnson Polymer)10.0 **** 42.6 section ethylene glycol A 5.0 section glycerol After it mixed each component other than xanthan gum among 5.0 section above-mentioned each component and the ball mill performed distributed processing for 24 hours, xanthan gum was added, churning was performed for 1 hour, and the white water-color-ink constituent with a viscosity of 12000cps (E mold viscometer, st rotor, 1rpm, 25 degrees C) was obtained.

[0028] Except only the amount having added the polyoxyethylene oleyl ether except for RIPOMIN LA of example of comparison 1 example 1, it made like the example 1 and the yellow water-color-ink constituent of viscosity 475cp was obtained.

[0029] The red water-color-ink constituent of viscosity 1870cp was obtained like the example 3 except only the amount having added polyoxyethylene hardening castor oil except for REBON 2000 of example of comparison 2 example 2.

[0030] Except only the amount having added sodium polyacrylate except for the xanthan gum of example of comparison 3 example 3, it made like the example 4 and the black water-color-ink constituent of viscosity 316cp was obtained.

[0031] Except only the amount having added the energy call CNS (an imidazoline mold betaine, LION make) except for ANHI toll 86B of example of comparison 4 example 4, it made like the example 4 and the blue water-color-ink constituent of viscosity 1025cp was obtained.

[0032] Except only the amount having added the copolymer of the methyl vinyl ether and a maleic anhydride except for the carboxymethyl cellulose of example of comparison 5 example 5, it made like the example 5 and the blue water-color-ink constituent of viscosity 365cp was obtained.

[0033] Except only the amount having added tetra-oleic acid polyoxyethylene sorbitol except for OBAZORIN LB of example of comparison 6 example 6, it made like the example 2 and the black water-color-ink constituent of viscosity 2200cp was obtained.

[0034] SWANOL of example of comparison 7 example 7 Except only the amount having added polyoxyethylene octyl phenyl ether except for AM-3130N, it made like the example 2 and the white water-color-ink constituent of viscosity 11000cp was obtained.

[0035] As mentioned above, ink hold tubing (the Pentel CO., LTD. make, refill for K105) which has the transparency it is opaque from the hollow pipe made from polypropylene the nickel silver ball-point chip (ball material: cemented carbide) was connected [hollow / end] in the water-color-ink constituent obtained in examples 1-7 and the examples 1-7 of a comparison was filled up with 0.8g, and it examined about writing distance, ball *****, BOTE, the blot of a hand, and the shade of a hand. A result is shown in Table 1 and Table 2.

[0036] Writing distance: Writing rate 7 cm/sec, 100g of loads, and writing distance until it carries out a continuation note at the writing include angle of 70 degrees and ink is no longer breathed out were measured using the rotation type continuation spiral written examination machine (written examination machine MODEL made in TS-4C-20 energy machine Industrial Research Institute). (However, examples 1-7 did not carry out the regurgitation of the ink, although 20% of the ink constituent filled up with the examples 1-4 of a comparison remained to having used all the filled ink constituents.)

Ball *****: In the above-mentioned written examination, the difference of the ball wire extension before a note and the ball wire extension after 500m continuation note was made into ball *****. In addition, the ball wire extension measured the die length from the small sum of a ball-point chip to a ball tip using the tool maker's microscope (digital type small measuring microscope MODEL STM-DH Olympus Optical Co., Ltd. make).

BOTE: In the above-mentioned written examination, the number of BOTE in 100m of initial hands was measured visually. In addition, the part which is 1.5 to 2.0 times [usual] the hand width of this was measured as BOTE by die length of about 3mm.

A blot of a hand: In the above-mentioned written examination, the largest hand width was measured and the visual judgment of whether the boundary of the hand of the part is not clear was carried out (is the hand blurred?).

a boundary -- not clear -- x a boundary -- shade [of a clear --O hand]: -- in the above-mentioned written examination, the visual judgment of the part where the hand concentration in 100m of initial hands is

thin was carried out, and the die length was measured.

[0037]

[Table 1]

試験項目	筆記距離 (m)	ボール沈み量 (mm)	ポテ (個)	筆跡の滲み		筆跡の 濃淡 (m)
				巾 (mm)	境界	
実施例 1	630	2.0/100	0	0.5	○	0.0
実施例 2	820	2.0/100	0	0.4	○	0.0
実施例 3	800	2.5/100	2	0.5	○	0.0
実施例 4	620	3.5/100	0	0.5	○	0.0
実施例 5	630	2.0/100	0	0.5	○	0.0
実施例 6	760	1.8/100	3	0.4	○	0.0
実施例 7	880	2.1/100	3	0.4	○	0.0

[0038]

[Table 2]

試験項目	筆記距離 (m)	ボール沈み量 (mm)	ポテ (個)	筆跡の滲み		筆跡の 濃淡 (m)
				巾 (mm)	境界	
比較例 1	500	8.0/100	5	0.5	○	0.0
比較例 2	610	5.5/100	0	0.4	○	2.0
比較例 3	520	9.0/100	10	0.5	○	0.0
比較例 4	500	8.7/100	0	0.5	○	0.4
比較例 5	515	6.5/100	12	0.5	○	0.0
比較例 6	620	5.0/100	0	0.7	×	0.0
比較例 7	500	9.0/100	0	0.6	×	0.0

[0039]

[Effect of the Invention] As mentioned above, as explained to the detail, the water-color-ink constituent

concerning this invention can lessen wear of the ball receptacle seat by ball rotation in the range which problems, such as BOTE of ink, a blot of a hand, and separation of an ink constituent, do not generate, and the desired end that ball **** can prevent as much as possible can fully attain it. Therefore, original long note distance corresponding to the amount of the ink with which this was filled up is realized.

[Translation done.]